

REMARKS

Reconsideration of this application and the rejection of claims 1-8 are respectfully requested. Applicants have attempted to address every objection and ground for rejection in the Office Action dated March 2, 2009 (Paper No. 20090224) and believe the application is now in condition for allowance. The claims have been amended to more clearly describe the present invention.

As a preliminary matter, Applicant affirms the election of claims 1-8 which are drawn to a concrete panel having a specific density. Withdrawn claims 9-24 have been cancelled. Applicants have added new claims 25-30 which, similar to claims 1-8, are also directed to a concrete panel having a specific density.

Claims 1-8 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 3,802,147 to O’Konski in view of U.S. Patent No. 5,494,513 to Fu et al. O’Konski discloses a prefabricated composite panel having a frame 10, a reinforcing layer 13, and a concrete slab 14. However, the concrete slab 14 of O’Konski is not lightweight concrete. The Fu patent is cited for disclosing the existence of lightweight concrete. The Examiner argues that it would have been obvious to modify the concrete slab 14 of O’Konski with the lightweight concrete of Fu.

Claim 1 recites, in part, “a frame including a plurality of spaced apart frame members having at least one flange; a reinforcing layer fastened to said flange of at least one of said frame members; and a concrete slab having a density of 400 to 1760 kg/m<sup>3</sup> (25 to 110

pcf), wherein said concrete slab has a front face and a rear face, wherein said reinforcing layer and said flange are embedded in said slab, and another portion of said frame protrudes from said rear face of said slab.” The references do not disclose the use of concrete having a density of 25 to 110 pcf in the context of a composite frame and concrete panel.

There is no support in the cited art for the Examiner’s assertion that it is an obvious design choice to use lightweight concrete of the claimed density range. The Board of Patent Appeals has held that when “there is no evidence or suggestion in [a reference] of a certain configuration”, than a finding of obviousness is improper. *Ex Parte Katoh et al*, Appeal 20071460, Decided May 29, 2007. In the obviousness rejection, the Examiner merely asserts it would be obvious to substitute lightweight concrete to provide a lighter weight building material without sacrificing structural integrity. However, Applicants note that there is no evidence or suggestion in O’Konski or Fu et al. of using concrete having a density of 25 to 110 pcf in the context of a composite frame and concrete panel.

As discussed in the specification at page 3, lines 16-18 and at page 7, lines 19-26, prior to the present composite panel, lightweight concrete has not been used in prefabricated, vertical building panels. Lightweight concrete provides extra workability and protection from freeze thaw, however in exchange for this workability, there typically is a decrease in strength in lightweight concrete. Due to the usual decreased loading strength, conventional applications of lightweight concrete have largely been limited to horizontal

applications such as fill, slabs and floors. Conventional wisdom was to use heavy concrete, and to reduce the weight of the panel by reducing the thickness of the slab.

Further, concrete of the claimed density (per claim 1), and aerated concrete (per claim 2), are different products from conventional heavy concrete. It is not merely a matter of discovering optimal or working ranges. Lightweight and aerated concrete differs from conventional heavy concrete in that a foam or other air entraining additive is combined to the mixture of aggregate and cement. O'Konski doesn't disclose the lightweight or aerated concrete, and cannot achieve the stated density range merely by "optimizing" the constituents disclosed in the reference.

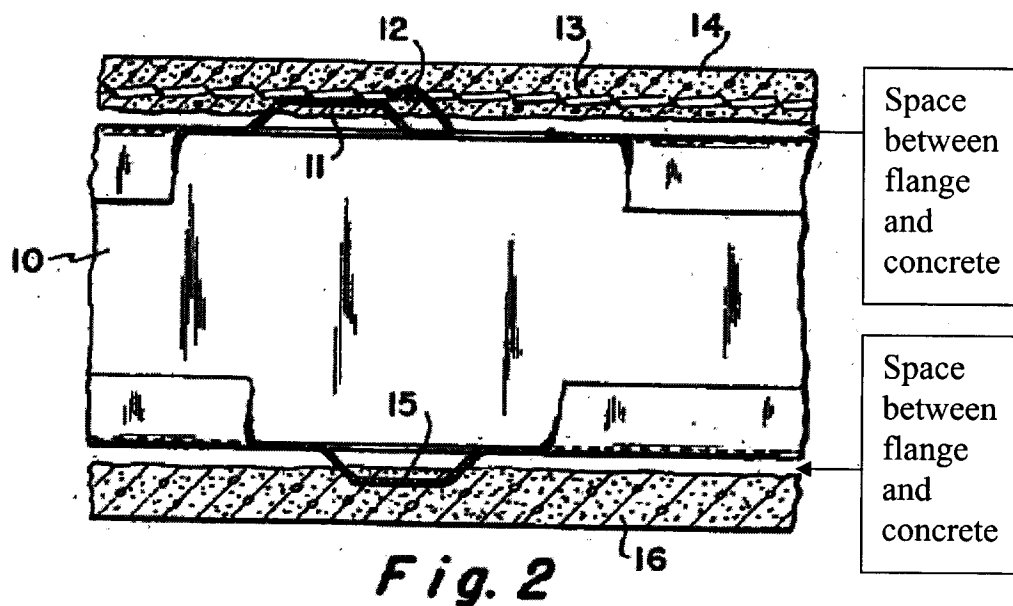
Further, the Board has found obviousness improper when the Examiner has not provided any evidence that a particular modification was conventional in the art. *Ex Parte Owlett*, Appeal 20070644, Decided June 20, 2007. The Examiner has provided no evidence that providing a composite frame and concrete building panel with lightweight concrete was conventional in the art. Indeed, all prior art directed to composite frame and concrete panels disclose heavy weight concrete. The Fu reference merely discloses lightweight concrete, but not in the context of a composite frame and concrete building panel.

With respect to dependent claims 2-8, none of the references disclose the features in combination with independent claim 1. Additionally, none of the references disclose the use of lightweight concrete having a density of 400 to 1760 kg/m in a composite frame and concrete panel. As discussed, *supra*, lightweight concrete of the specified density

is not an obvious design choice.

Further, the rejection of independent claim 1, and the claims that depend therefrom, is separately traversed for the following reason: O’Konski does not disclose or suggest “wherein said reinforcing layer and *said flange* are embedded in said slab.” [emphasis added].

As seen below in FIG. 2, O’Konski discloses a composite panel in which frame tabs 11, 12, 15, 19 are embedded in a concrete slab 14. The tabs 11, 12, 15, 19 extend from the flanges. However, the flanges themselves are not embedded in the concrete 14, but instead have a spaced relationship to the concrete slab 14.



At column 3, lines 11-19, O’Konski states:

“In particular, the maintaining of a spaced relation between the wall surface elements and the steel studding provides a more effective sound-proofing characteristic for walls, more effective insulation

against transmission of heat and cold through the walls, a lower 'fire rate' index or rate of conduction of heat through the wall, and elimination of the possibility of marking of the wall with lines delineating the projection of the studding thereon."

With respect to claim 25, the claim recites "said first flange and said second flange are embedded in said slab." Further, with respect to claim 29, the claim recites "two spaced apart flanges and a web therebetween defining a C-channel...at least one of said flanges are embedded in said slab." O'Konski does not disclose a C-channel where at least one of the flanges of the C-channel is embedded in a concrete slab. O'Konski teaches away from embedding the flanges of frame members 10 into the concrete 14.

In support of O'Konski teaching away from the present invention and the non-obviousness of claims 1-8 and 25-30, Applicant submits the enclosed Declaration of Brian Smith, the inventor of the present patent application. Mr. Smith has personal knowledge of most concrete wall systems being produced and installed in the United States.

In the Declaration, Mr. Smith notes that to his knowledge, one of the reasons that the industry avoided embedding frame members into conventional concrete is due to the heat transfer that can occur between the frame and the concrete, which can result in problematic moisture condensate on the interior frame members (see paragraph 11 of Declaration). Mr. Smith also notes that the problem was conventionally solved by spacing the frame members a distance apart from the concrete panel. Mr. Smith's statements are supported by the O'Konski reference which states: "In particular, the maintaining of a spaced

relation between the wall surface elements and the steel studding provides ... more effective insulation against transmission of heat and cold through the walls” (at column 3, lines 11-19, O’Konski).

Departing from the teaching of O’Konski, Mr. Smith discovered that frame members can be successfully embedded in lightweight concrete because lightweight concrete is a better insulator, which was not recognized by the prior art (see paragraph 12 of Declaration).

Thus, O’Konski teaches away from embedding the flanges of frame members into the concrete. For the foregoing reasons, Applicant submits that all claims 1-8 are allowable.

Applicants have added new claims 25-30. Applicants submit that claims 25-30 are allowable for the reasons provided above with respect to claims 1-8.

Applicant submits that in view of the above-identified amendments and remarks, the claims in their present form are patentably distinct over the art of record. Allowance of the rejected claims is respectfully requested. Should the Examiner discover

Appl. No.: 10/565,317  
Amdt. dated June 2, 2009  
Reply to Office Action of March 2, 2009

there are remaining issues which may be resolved by a telephone interview, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

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